

Claims

1. A fuel injection valve for internal combustion engines, having a valve body
5 (1) in which a bore (5) that is defined on its end toward the combustion chamber
by a valve seat (18) is embodied, in which valve seat a first row of injection
openings (20) and a second row of injection openings (22) are embodied, and the
second row of injection openings (22) is closer to the combustion chamber than
the first row of injection openings (20), and having an outer valve needle (8), which
10 is located longitudinally displaceably in the bore (5) and which cooperates with the
valve seat (18) to control the first row of injection openings (20), and between the
outer valve needle (8) and the wall of the bore (5), a pressure chamber (14) is
embodied that can be filled with fuel at high pressure, and having an inner valve
needle (10), which is located longitudinally displaceably in an inner bore (11) of the
15 outer valve needle (8) and which cooperates with the valve seat (18) for controlling
the second row of injection openings (22), and having a pressure shoulder (30),
embodied on the inner valve needle (10), by way of which shoulder, upon
subjection to pressure, a hydraulic opening force is exerted on the inner valve
needle (10), characterized in that the outer valve needle (8), as a result of its
20 opening stroke motion, opens a throttle connection (32) from the pressure
chamber (14) to the pressure shoulder (30) of the inner valve needle (10).

2. The fuel injection valve according to claim 1, characterized in that the
throttle connection is embodied as an annular gap (32) between the wall of the
25 inner bore (11) and the inner valve needle (10).

3. The fuel injection valve according to claim 1 or 2, characterized in that in the
outer valve needle (8), by means of a radial enlargement of the inner bore (11), a
pressure vessel (27) is formed in which the pressure shoulder (30) of the inner
30 valve needle (10) is located, and which can be made to communicate with the

pressure chamber (14) by the throttle connection (32).

4. The fuel injection valve according to claim 3, characterized in that the pressure vessel (27) is defined by an annular shoulder (34) of the outer valve
5 needle (8) that is oriented counter to the valve sealing face (35) of the outer valve needle (8).

5. The fuel injection valve according to claim 1, characterized in that the inner valve needle (10), near the valve seat (18), has a guide portion (25) with which it is
10 guided in the inner bore (11).

6. The fuel injection valve according to claim 5, characterized in that facing away from the combustion chamber toward the guide portion (25) of the inner valve needle (10), a return conduit (28) is embodied between the wall of the inner
15 bore (11) and the inner valve needle (10), by way of which conduit the pressure chamber (27) can be pressure- relieved.

7. The fuel injection valve according to claim 6, characterized in that at least polished section (46) is embodied on the guide portion (25) of the inner valve
20 needle (10).

8. The fuel injection valve according to claim 5, characterized in that the pressure shoulder (30) of the inner valve needle (10) is embodied on the end toward the combustion chamber of the radially enlarged guide portion (25).